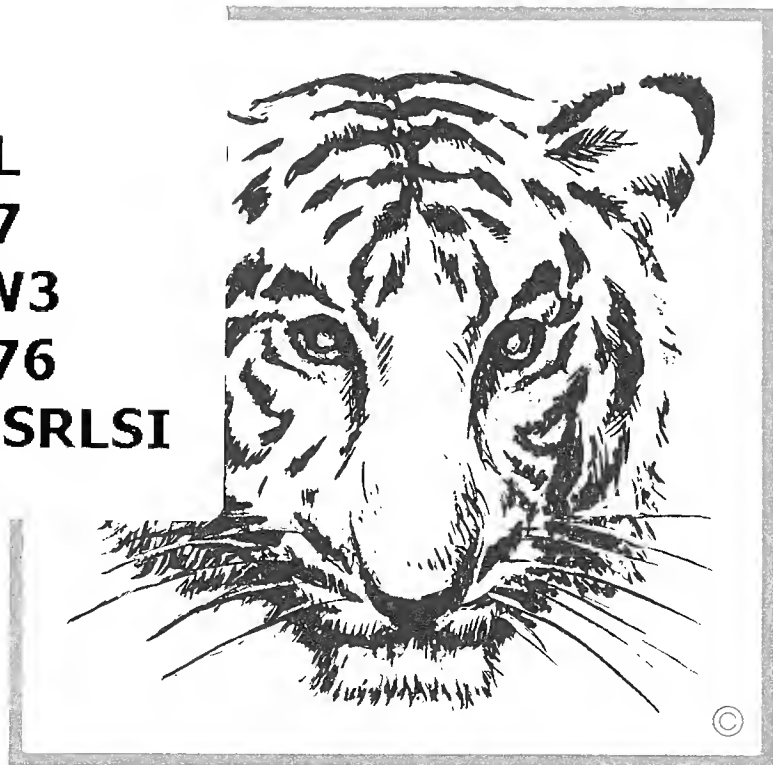


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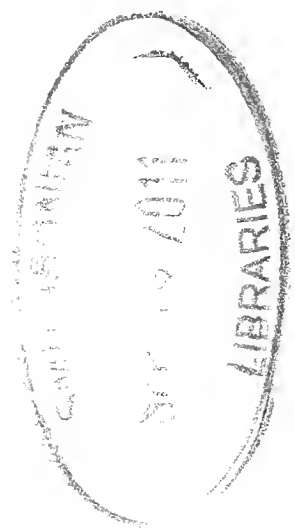


Photo by Donna Grosvenor

“O Sole Mio!”

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PERRY-GRINATIONS

GHANA: A delightful people, self-governing for only two years and enjoying it. Their wildlife is declining, but not because of commercial exploitation. Wild animals are the only meat for many Ghanaians, and human population has increased beyond the meat supply. Wildlife preserves exist, but it's difficult to defend them against hungry people. In a small Ashanti village, we met a man with a live pangolin. "How much?" the Kumasi Zoo superintendent asked.

"Two cedis," was the reply (about \$2.00).

"Too much. I'll give you one."

"For one I'll eat it," the man said—and there is the price of wild meat.

There is also a prevailing attitude toward animals, expressed by one visitor to the Kumasi Zoo on seeing a duiker: "How delicious!" But Ghana is urbanizing, and the city-bred people are showing more interest in zoos. Ghana does not have a long zoo tradition.

The zoo at Kumasi is city-owned and marginally supported. Most of the cages, pits, and paddocks are simple in design and construction, and in rather poor repair. The site is reasonably large, including an undeveloped marshy area where black cobras can be collected. Mr. Owusu, the superintendent, has had some veterinary training as well as training at the Frankfurt Zoo.

The Accra Zoo was one of Nkrumah's minor extravagances, built for his private use adjoining the palace grounds. He imported a good architect from the United States and consultants from Europe. The animal exhibits are quite good, but the public walks were scaled for Nkrumah and his guests, not for crowds. This zoo is now operated by the wildlife department.

My assignment, from the wildlife department, was to study the two zoos and the site for a proposed zoo, much larger, and to suggest how they could be developed by the wildlife department for conservation education.

KENYA: We stopped briefly on our way to India for our first look at East Africa. No one should fail to visit the Masai Mara Game Preserve. At the Keekorok game lodge, you're called at six. After a quick cup of tea, you board a Land Rover, with driver and game

guard. Before breakfast, you will have seen large numbers of lions, giraffes, baboons, elephants, rhinos, buffalos, gazelles, wildebeests, elands, hartebeests, ostriches, topis, zebras, hyenas, jackals, impalas, and waterbucks.

Nairobi National Park is as close to downtown as the National Zoo is. It covers 44 square miles, and is surrounded by developments on three sides. The fourth is still open, so animals can come and go, but in time it will become an enclave. The wildlife here, almost as varied as in the Masai Mara, has become well adapted to visitors. The photographer needs no telephoto lens. But some conservationists feel the park is doomed by urban development and overgrazing.

It may be, but it could be maintained, not as a true wildlife preserve but as a unique and splendid open zoo, a zoo without fences where predators still make their kills. Skillful management would be required: regulation of numbers, supplemental feeding at times when the ungulates would normally migrate elsewhere.

INDIA: The chief purpose of the trip was attending the Tenth General Assembly of the International Union for Conservation of Nature (IUCN), at New Delhi. Three hundred delegates came from 66 nations, as well as more than two hundred Indian scientists and conservationists. Many of the technical papers dealt with Indian wildlife problems. With Smithsonian Institution support, study groups visited six Indian wildlife areas before the conference and returned to make reports.

Mrs. Ghandi gave the opening address. The President received us at the magnificent Palace. The Post Office brought out an IUCN commemorative stamp and set up a booth at the meeting hall for first-day cancellations. The delegates were entertained by government ministries and welcomed, individually, by Indian colleagues.

Eight days of hard work demonstrated the maturing of IUCN to an influential worldwide conservation group, scientifically-based but action-oriented. Gerardo Budowski is leaving UNESCO to become IUCN's first Director General. Almost for the first time, lively controversies broke out, signifying that delegates from Africa and elsewhere intend to have more influence in policy-making.

Dillon Ripley retired from IUCN's Executive Board, after six years of service. Lee

Talbot, who chaired the Program and Budget Committee, was elected for a six-year term.

After eight days of talk, we best remember the quiet eloquence of Dioum from Senegal: "We will preserve only what we love. We love only what we understand. We understand only as we are taught."

After New Delhi, we joined a small party of delegates from Israel, Sweden, France, Germany, Malaya, and Canada on a visit to the Kaziranga Preserve in Assam, home of the Zoo's Indian rhinoceroses. From a dangerously low point of 50 to 60 rhinos, population has now increased to about 400, possibly more than the preserve can support.

The zoo at New Delhi is one of the world's best: spacious, with many moated exhibits, a fascinating collection. The free-flying painted storks are among the unusual features.

The Calcutta Zoo, like the city itself, is decaying. It still has many points of keen interest, and the animals seem well cared for. The lake full of migratory waterfowl and a huge tree full of sleeping flying foxes are quite special.

THAILAND: The contrast between Calcutta and Bangkok is incredible: the one jammed with half-fed, homeless people, shabby, filthy, odoriferous; the other clean, modern, bustling, where people smile and seem to enjoy life. The zoo is being rebuilt; we saw construction work everywhere. One interesting feature, not new, is a large waterfowl pond enclosed with light wire mesh on tall masts and cables.

SINGAPORE: This must be one of the world's most modern cities, prosperous, governed by brilliant Chinese, most of them under 40. A new zoo is being designed, and I had been invited to consult with the governing board. The site is excellent: a 260-acre peninsula in their largest reservoir. They seem to have ample funds to make it excellent.

INDONESIA: We spent a week in Java, a 600-mile-long island with 60 million people. Since almost every square inch of the island is cultivated, little room remains for wildlife, but the zoos are immensely popular. We visited the Djakarta Zoo on Hari Raya, the end of Ramadan, and the traffic jam began five miles before the zoo gates.

The conservation problem is managing the forest and other lands of the less-settled

islands, chiefly Kalimantan, Celebes, and Irian. These are far from the Indonesian capital. The multiplicity of cultures and languages adds to the difficulties of governing.

Extensive animal smuggling is a product of land exploitation. Indonesian authorities can't hope to patrol the enormous coastlines. But there are moves toward a regional agreement, which would close the markets to which these contraband animals now go.

With limited resources, the zoos are making efforts to breed some of their rare species. We saw at the Surabaya zoo a pair of "Rusas," (*Cervus kuhlii*) a rare deer from Bawean Island, supposedly the first in captivity. Surabaya has also undertaken to breed the mountain anoa.

One of the zoo's problems is a surplus of orangutans. Inevitably, under present conditions, young ones are brought in from the forest, or confiscated. The Surabaya Zoo had twenty, and adequate housing for not more than four. We had three tasks: to design better zoo facilities for them; to arrange that some be sent to American zoos; and to promote establishment of a field station in Kalimantan, in a suitable preserve, from which such orangutans can be returned to the forest.

HONOLULU: Zoo Director Jack Throp seems to have solved the problem of propagating Galapagos tortoises. We saw the survivors of this first clutch, now weighing 25 pounds and more, and the 19 survivors of the third, not yet up to one pound. The Wild Animal Propagation Trust, of which Ted Reed is President, has proposed a cooperative tortoise project for Honolulu. If it goes ahead, we'll send some of ours there for breeding and have a claim on future surplus.

The zoo is small but exceptionally attractive, located just back of Waikiki Beach, in a public park. Throp is giving special attention to the wild and feral species of the islands. He is also active in many conservation projects. In part through his efforts, a splendid coral reef is now a nature preserve. We donned fins, masks, and snorkels for an official inspection.

—John Perry

NEW HOME FOR SCIENTIFIC RESEARCH

The National Zoo's Scientific Research Department took one of three progressive

giant steps forward when on January 5th and 6th books, beasts, and beaucoup equipment were moved from the department's old quarters on the top floor of the reptile building to modern facilities in the new hospital-research building "way up yonder on administration hill."

Resulting in tired muscles and aching backs for the labor crew (who did an excellent job), lock, stock, and Tasmanian devils were moved as this first step proceeded smoothly with all of SRD's equipment remaining intact and no "escapees" being reported from among the dasyurid marsupial collection which was previously housed in the reptile house facilities.

Future successive steps in SRD's move will include a mass exodus of the remainder of SRD's fur-bearing faunal entourage from "the dungeon" confines of the lion house basement. Rodents and insectivores will make the pilgrimage to roomy new enclosures as soon as their housing facilities are completed.

Finally, SRD's electronic equipment will be installed, checked out, and made ready for operational use, enabling the scientific staff to get back to business as usual with two big additional advantages: adequate operating room and quarters that promise to offer the staff versatility in their usage.

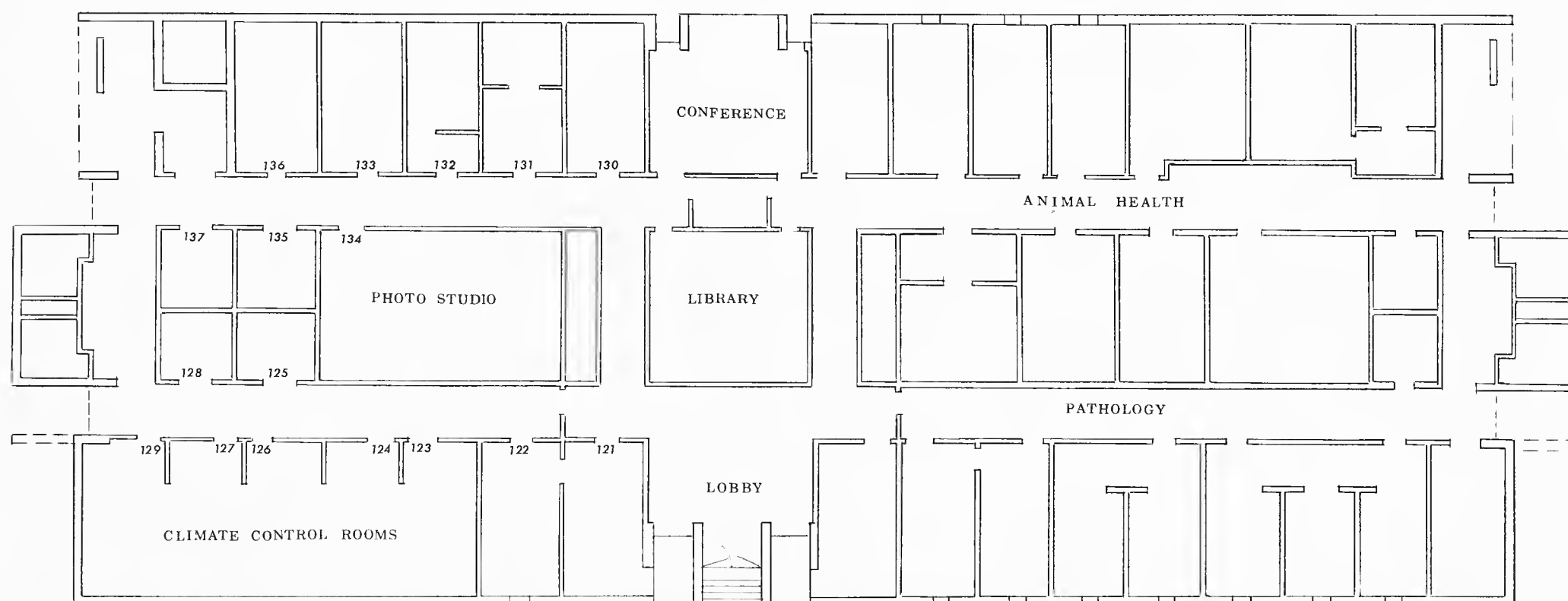
The new hospital-research building provides room and facilities for many new possibilities pertaining to SRD's ever-expanding research program. Allow me to give you a sneak preview of some of our new facilities by conducting you on a brief tour (via imagination) through SRD's section of the building.

Entering through the first floor's main entrance, located in the center of the front of the building, we find ourselves in the main lobby and are immediately confronted with the decision of turning either right (south) towards the Animal Health Division section of the building or left (north) to SRD's first-floor facilities. (Actually, I'm over-simplifying since SRD and the Animal Health Division will both be utilizing some of the same facilities, such as the library conference room, but this is generally how the first floor is laid out, with the Animal Health Division occupying the southern half and SRD utilizing the northern half of the building.) Back to the tour

The first door (Room 121) on our left opens into the office of SRD's administrative officer, Mrs. Wyotta Holden. Adjoining her office is the office (Room 122) of the Zoo's resident scientist, Dr. John Eisenberg.

Leaving Dr. Eisenberg's office, we turn left on entering the hallway and find that the next five doors (123, 124, 126, 127, and 129) on our left open into a common large room that is partially partitioned into five sections. This room will eventually house five environmental control units. Each unit will be self-contained and have the capability of being completely sealed off from the surrounding environment of the large room. Investigators will be able to control the temperature and humidity within each chamber by manipulating dials on each unit's control panel. These units will be invaluable in studying torpidity and many other aspects of behavior regarding the relationship between an animal and its environment. One additional opportunity that these units offer the scientific staff is the

The Scientific Research Department is now occupying the new Hospital Research Building on Administration Hill. The Animal Health Department, under Dr. Gray, and the Pathology Department, under Dr. Sauer, hope to move in to the south wing of the building in the next two or three months.



ability to maintain for study purposes small mammals that have fairly critical temperature-humidity requirements. Many of these animals have not previously been studied in captivity due to the lack of facilities for providing the proper environment necessary for the maintenance of these animals when they are taken from their native habitats.

Across the hallway from the environmental control room, we find an equipment storage room (Room 125) and a large workroom (128).

Proceeding to the rear hallway, we turn right and the first door on our right (137) opens into a storage room to be used for general storage purposes. Across the hallway is the writer's office-laboratory (136) in which are housed half a dozen small carnivorous marsupials that are being studied at present. Room 135 houses the closed-circuit TV equipment and video-recorder. Next door (134) we find a large photographic studio. Within this studio a large triangular-shaped enclosure will be built. At the apex of this enclosure the closed-circuit TV camera will be installed. Investigators located in Room 135 next door will be able to study and record the behavior of animals housed in this large enclosure without being in the same room. This is a desirable ability since the behavior of the animals being studied is in no way affected by the presence of an observer. Room 133 is to be used as a general laboratory while the room next to it (132) is the sound studio. This facility is actually two rooms, the larger being used as a holding area for the animals whose vocalizations are to be recorded, and an anteroom that houses the recording equipment. Microphones will be installed in the enclosures in the holding room (which is soundproof to external noises). The investigator will then enter the anteroom where the recording equipment is located, close the access door between the two rooms and begin recording. Again, the animals being studied will not be affected by having an observer in the same room and external interference will be kept at a minimum.

Room 131 is a photographic lab with an adjoining darkroom. A projection room (130) adjoins the library conference room.

This is roughly the extent of the research facilities on the first floor of the building. In the basement are two holding rooms for animals. The main room is 145 feet long and already houses one pair of Tasmanian devils and some of our other marsupial denizens.

I hope I have been able to give you some idea of what the Scientific Research Department's new facilities will be like. Come and see us after the building is "officially" opened, and enjoy a first-hand tour.

—Larry R. Collins
Zoologist, SRD

PREG-WATCH FOR SNOWSTAR

From December 19th to 27th, 4:30 P. M. to 7:30 A. M., thirty-two families from the preg-watch committee "listened" in the bear shack to Snowstar, the polar bear, by means of a super-sensitive microphone installed in her den. They listened in hopes of hearing the squeaking of newborn cubs, and to pass the long winter nights away, they made notes of what they heard.

The comments in a maternity-ward waiting room certainly couldn't be as interesting as those of our fifty "expectant parents": 40 hours of breathing; 20 hours - no breathing; 35 hours - moaning, groaning and heavy panting; 10 hours - drinking and shuffling around; 15 hours of snoring. One listener after a long period of silence thought some comment was called for and recorded: "9:20 P. M. - absolutely nothing." Another wrote: "7 P. M. - preg-watcher's stomach growling." And from what other maternity ward can one hear howling wolves, barking sea lions, and chirping birds?



Star Staff Photo by Owen Duvall

Snowstar's baby.

After eight nights of fruitless vigil, we folded our tents and stole silently away in the snow, and a month later, on January 24th, like all unreliable females, Snowstar gave birth to three cubs. One was stillborn, one died after a few days, but the third is getting TLC from Elizabeth Reed, dauntless foster mother to so many wild babies.

Our special thanks to those volunteers who contributed their time during the holidays. And be of stout heart - Dr. Reed tells me we have a black rhino watch coming up. Anyone

wishing to be a preg-watcher can get in touch with me at 929-1155.

—Doris Lahr

BONGO BONGO!

On January 29th Dr. Theodore H. Reed left Washington for Kenya on the second bongo expedition sponsored by the National Geographic Society. In November 1968 he spent a month in Kenya and it was at that time that traps were set out in bongo territory by John Seago and Tony Parkinson, experienced animal collectors with headquarters in Nairobi. Ted was with them when they set up camp in the Aberdare Mountains, but nary a bongo did he see. Since then, however, four have been captured, one of them a fully adult male, said to weigh between 500 and 600 pounds—a magnificent animal.

This return visit of Ted's is to study the shy and elusive bongo in the wild. Once again he is walking the hills of the Aberdare Mountains. Recently a herd of elephants moved into the trapping area; they destroyed one trap and damaged others. Moreover, they frightened the bongos out of the territory, so Ted does not expect that there will actually be a bongo in a trap when he gets there; his main interest is to find out where the animals have gone so that he may observe their feeding habits, what trails they take, and other behavioral activities.

Ted is not going to bring the bongos back with him, as they have to be quarantined overseas, and then again in Clifton, New Jersey. But we can look forward to having a trio of these beautiful antelope, or perhaps two pairs, some time during the summer or early fall.

ARMADILLOS

It was a Monday night. I had just returned from a class and poured a cup of coffee when there was a noise at the door. I opened it to find a furtive NZP staff member crouched over a peculiar bulge in the stomach. A fast hand under the shirt and a piece of blanket appeared. It contained four pink scaly creatures: miniature armadillos. Quick with the syringe and warm up the milk — execution of a few dance steps to indicate pleasure — and each baby was given a few drops. Back in the blanket and back under the shirt (mine this time). And all night a bit of milk every two hours with some extremely cautious napping in between.

By morning, one was dead but I had discovered that the other three were able to lap milk from a Petri dish. That night a second died, but the remaining two seemed healthier.

The babies had been collected on Thanksgiving Day by a tribe of Brazilian Indians 400 miles south of the Amazon River, to be pets of a family of anthropologists. By the time I got them on December 1st they had eaten only a bit of bread and milk, were cold and weak, and probably about 30 grams underweight. Their eyes were open which meant they were at least 14 to 18 days old (Dennis Meritt: pers. comm.). All four were males. In armadillos, one to three ova are fertilized and each splits into four; identical quadruplets are the result of each fertilized egg. Actually, these four seemed to be two pairs: one set was dark and large, the other pinker and smaller. One of each pair survived, and exhibited much different personalities. The larger, "Hippery", was slower and less active; the smaller, "Slippery", was quicker and more adventurous. (In fact, Slippery was so active in the incubator, where they spent the days at the Zoo, that by the end of the first week he had managed to climb into the heating element and burn off half of his left ear.) It would have been interesting to know if the other two animals would have matched the survivors' characters as they did their physical appearance, or if they would have been different again.

On arrival, Hippery was 190 mm (about 7-1/2 inches) from nose to tip of tail and weighed 74.7 grams. Slippery was 184 mm long and weighed 70.7 grams. Autopsy on the dead animals revealed the presence of four molars on both upper and lower jaws, both sides.

When held at the dish, they would lap about 2 cc of milk at three-hour intervals. At first they were not good at this—they would put their noses in too far and get milk in them. Lapping styles differed: Hip extended his tongue fully, Slip used shorter faster movements and generally only the tip of the tongue.

The milk was an animal milk, Orphalac, mixed with Initol, multivitamins and iron drops. Diarrhea was a problem, so applesauce was added by the end of the first week. The formula was thickened gradually by baby cereal and baby beef; raw egg yolk was added occasionally. Currently the food mixture is of junior baby beef, ground Ken-L-Ration dog meal, and cottage cheese, with Esbilac (another animal milk), boiled sweet potato, hard-

boiled egg yolk, multivitamins and iron drops. This mixture is given four times a day and approximately three teaspoons are eaten at each feeding, about 1-1/2 teaspoonfuls each. At this writing (January 24) Hip weighs 362.0 grams and is 286 mm long, Slip weighs 335.2 grams and is 284 mm long.

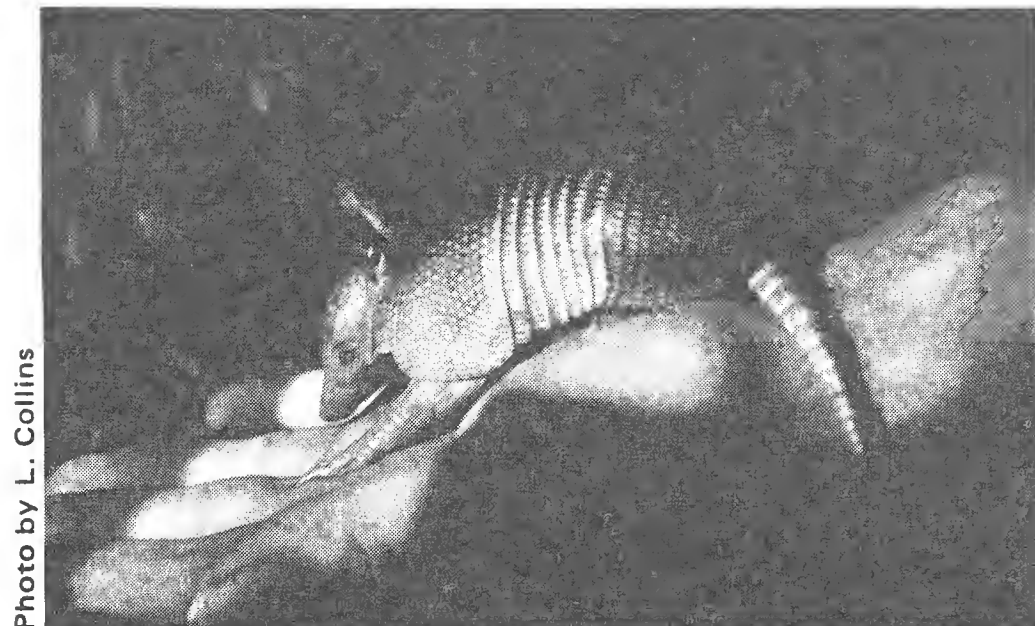


Photo by L. Collins

Armadillo, approximately two weeks old.

Constant problems have been the closing of the eyes (swabbing with mineral oil relieves this somewhat) and persistent diarrhea (the presence of *Strongyloides* and amoebae probably accounts for this).

For the first two weeks, the animals were a combination of baby and small-sized adult. They had to be held while eating, preferably wrapped in a towel, but would run around, explore limited areas, sit up and sniff the air with both forefeet up, follow moving feet. After two weeks adult behavior was the rule: they would eat by themselves, explore the total area alone or following, clean their front feet and genitals, scratch their bellies with their hind feet, rub their backs and ears against stationary items, use one place for sleeping and another specific place for eliminating (carefully scratching with the hind legs as if digging a hole and then with the forelegs as if covering the hole with dirt). At the fourth week, both began gathering materials for nest building with their forefeet, hunching over to hold the materials in place, and hopping backward to their sleeping place. When frightened they do not curl into a ball but, rather, start and run for the nearest shelter.

Hippery and Slippery are seven-banded armadillos, *Dasypus septemcinctus*. They are closely related to the Texas nine-banded armadillo. This species is rare in captivity and relatively unknown. When they are older Hip and Slip will probably be sent to Lincoln Park Zoo to be studied along with other members of the Edentata ("toothless ones") by Mr. Dennis Meritt.

—Judy Block

PARMA WALLABIES

At a ceremony attended by Ambassador and Mrs. John Keith Waller of Australia, two rare wallabies were presented to the National Zoo on February 6th by Dr. John S. Foster, Director of Research Development and Engineering, U. S. Department of Defense. Dr. Foster had received the wallabies as a gift from Sir Allen Fairhall, former Minister of Defense of Australia. In the absence of Dr. Reed, Assistant Director John Perry accepted the gift for the Zoo.

These small kangaroo-like animals are about two feet long with an 18" tail which is used as a sitting prop as well as a lever for a fast get-away. The body fur is grayish-brown with rusty shoulders and back and a whitish-gray chest and stomach.

Called parma wallaby or pademelon, this species has disappeared from its native haunts in New South Wales, due to man's settlement in the wallabies' lush coastal terrain. It was 35 years ago when the last one was seen in the wild in Australia. Fortunately, in 1870, Sir George Grey introduced the parma wallaby into New Zealand, which accounts for the existence of the current population.

At the present time, a survey is being made in New South Wales to determine if any colony survives in the greater part of its historical range. In New Zealand, this species of wallaby is officially protected by the New Zealand Forestry Service in order to prevent its elimination from Kawau Island.

In world zoos there are 62 parma wallabies exhibited. Included in this census are the following American zoos: Brookfield, Illinois; Milwaukee, San Diego, and San Francisco.

—Billie Hamlet

WINTER MISCELLANY

For the first time in its history, the Zoo was closed on Christmas Day, the following Friday (which had been declared a holiday), Saturday, Sunday, and again on New Year's Day. On December 23, 1969, the Zoo finally received from Congress the appropriation for the year which had begun back in July. The money appropriated was so much less than had been asked for, that only by the strictest economies can the Zoo continue to function. One decision that had regretfully to be made, was to close on holidays. On Christmas night the big snow hit Washington. Under the pres-

ent austerity program it was unthinkable to pay holiday and overtime pay to those workers who would be brought into dig the Zoo out of snowbanks. Using the normal work crew during regularly scheduled hours, it was Monday noon before walks and roads were sufficiently cleared to permit visitors.

On December 31 the contract under which Nilon Brothers had run the Zoo restaurant concession expired and was not renewed. Instead, on January 15th a five-year contract was awarded to Macke Co., which seemed to be the most appropriate for the Zoo of the nine firms that had bid. The restaurant is now closed, undergoing a complete remodeling and face-lifting, and will not be open until April. In the meantime Macke is operating a chuckwagon service, selling sandwiches, hot dogs, hamburgers, and soft drinks from a truck. February 1st was a beautiful spring-like Sunday and 65,000 visitors packed the Zoo, tying up Connecticut Avenue traffic for blocks. We understand that Macke did a land-office business, and that the number of sandwiches sold reached an astronomical figure.

Up at the bird house, Kerry Muller reports that things are quiet, but he is happy over the fact that we now have a pair of kagus instead of a lone individual. The red-fronted barbets have chicks, and Kerry says he is unable to find any reference to these birds having been hatched previously in captivity. If anyone knows of a record he would be glad to hear from them. Six black-necked swans hatched, but these we have had before.

NEW BOOKS

The World's a Zoo, John Perry. Dodd Mead & Co., 1969, \$6.95.

John Perry, in addition to being Assistant Director of the NZP, is a member of the Survival Service Commission of the International Union for the Conservation of Nature, Chairman of the Endangered Species Committee of the American Association of Zoological Parks and Aquariums, and Secretary of the Wild Animal Propagation Trust—obviously a dedicated man. "The World's a Zoo" is a thoughtful and thought-provoking book, one that asks more questions than it answers. Mr. Perry is deeply concerned about man's misuse of the land, about the population explosion, about man's

treatment of wild animals and destruction of their habitats. He points out that man himself is an endangered species.

There are interesting discussions of the role that zoos can play in conservation. Mr. Perry, for instance, has been involved in efforts to prevent the illicit smuggling of orangutans into this country. He describes the successful introduction of giraffes into Mexico, zebras into Texas, African antelope in Brazil, and European red deer in Argentina.

There have been prophets of doom before, from Fairfield Osborn and William Vogt to Rachel Carson. It was L. O. Howard who predicted fifty or more years ago that the insects would inherit the earth. Perhaps there is today a wider awareness of the seriousness of man's destruction of his environment, and of the awful fact that, as another writer has said, man may find himself "the last and loneliest species on earth."

Beever & Company, Joseph A. Davis. Harper & Row, 1969, \$5.95. Illustrated with drawings by the author and with photographs.

I think it was Ernest Thompson Seton who said many years ago that all his life he had wanted a pet otter and had never had one. "Ring of Bright Water" in recent years has led many people to believe that an otter would be a charming pet. To anyone who feels that urge I recommend Joe Davis' new book, "Beever & Company". It is filled with fascinating accounts of otter intelligence, otter psychology, otter curiosity, but, above all, otter destructiveness.

Being of an inventive turn of mind, Davis invented the otter-proof toilet, which baffled human guests more than it did the otters; and the otter-proof bed, which of course he soon found himself sharing with Beever, Samaki, Mimsy, or another of the succession of otters who shared (and regularly wrecked) his bachelor quarters.

An observant naturalist, formerly Curator of Mammals at the Bronx Zoo and now Assistant Director, Davis writes with a fine sense of humor and tenderness, and the book is a joy to read.

—L. Q. M.

